

THE SPECIES GROUP "PATZUNENSIS" OF THE GENUS *LACHESILLA* (PSOCOPTERA: LACHESILLIDAE).

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RESUMEN

Se tratan en este trabajo las seis especies de *Lachesilla* (Lachesillidae) que constituyen el grupo "Patzunensis", cinco de las cuales se describen como nuevas. *L. patzunensis* García Aldrete es transferida del grupo B. Cinco de las especies son mexicanas y una es guatemalteca. Se presenta un análisis de las relaciones de afinidad entre las especies del grupo, que se ubica cercano a los grupos "Corona" y "Rufa" de donde éstos, probablemente, han derivado.

ABSTRACT

This paper treats the six species of *Lachesilla* (Lachesillidae) that constitute the group "Patzunensis". Five species are described as new and *L. patzunensis* García Aldrete is transferred from group B. Five of the species occur in Mexico and one occurs in Guatemala. An analysis of relationships among the species in the group is presented. Group "Patzunensis" is close to groups "Corona" and "Rufa", these having probably evolved from the former.

There are some 300 species of psocids presently recognized in the genus *Lachesilla*, one of the largest in the order Psocoptera. García Aldrete (1974, 1982), divided the genus in 15 species groups and a category Incerta sedis. The species dealt with in this paper (other than *L. patzunensis* García Aldrete, 1972), had been referred to as Species Group D in previous papers. *L. patzunensis* had been included in Species Group B; it is here transferred to group D where it fits better; since it is, in this assemblage of species, the first named one, the Species Group receives its name "Patzunensis".

Seventy four specimens were examined; those utilized for microscopic study were dissected and their parts mounted either in Euparal or in Hoyer's Medium. Illustrations were made with a drawing tube mounted on the compound microscope. Measurements were taken with a filar micrometer whose measuring unit was 136 μ for wings, femora and tibiae, and 53 μ for other parts. The following abbreviations are used in the text for parts measured: FW: forewing; HW: hind wing; F: hind femur; T: hind tibia; t_1 and t_2 : first and second tarsomeres of hind leg; cten: number of ctenidia on t_1 ;

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p₄: fourth segment of maxillary palpus; Sc: scape; p: pedicel; f₁-f₁₀: antennal flagellomeres 1 to 10; IO: minimal distance between compound eyes on dorsal view of head; D and d: respectively, antero-posterior and transverse diameter of compound eye on dorsal view head; PO:d/D.

Unless otherwise indicated, the specimens were collected by the author. The location of the types is given with each description.

This paper is dedicated, with much affection, to Dr. Leonila Vázquez García who, this year, celebrates 50 years of professional life; during these 50 years, she has made important contributions to the study of Mexican Lepidoptera and has done much to promote the science of entomology in Mexico.

Species Group "Patzunensis".

Diagnosis

FEMALES. Posterior border of subgenital plate drawn out medially to form an approximately pyramidal or conical extension; apex entire or cleft; a transverse pigmented area underlying the plate. One pair of gonapophyses, apically pointed.

MALES. Hypandrium concave posteriorly, with distinct fields of setae on each side; extended posteriorly to form, on each side, wide based, distally acuminate, heavily sclerotized apophyses. Paired phallic apodemes, each arm forked. Each paraproct with a stout mesal prong; epiproct distinctly biconvex, each half with a sclerotized protuberance, next to longitudinal midline and to anterior border.

Lachesilla bifurcata n.sp.

FEMALE. *Color* (in 80% alcohol). Ground color chestnut, compound eyes black, ocelli clear, each with an ochre centripetal crescent. A faint, dark brown band from third ocellus to each antennal fossa; also, a dark brown spot between third ocellus and epistomal sulcus. Maxillary palps dark brown. Antennae and legs pale brown. Wings hyaline (Fig. 1), veins straw colored. Abdomen pale, with dark brown subcuticular rings.

Morphology. Distal half of subgenital plate (Fig. 4), with distinct shoulders; apex approximately rounded, sometimes slightly jagged, with field of microspines next to posterior border. Surface of the plate setose, with four distinct mesal macrosetae; a wide, distinct, transverse area underlying the plate (Fig. 4). Gonapophyses (Fig. 5), narrowing distally, with apices extended posteriorly to form small cones; outer border of each gonapophysis heavily sclerotized. Ninth sternum (Fig. 5), with a distinct, almost ovoid pigmented area anteriorly and a well defined pigmented arch on distal half, enclosing the spermapore. Epiproct (Fig. 6) distally rounded, setose. Paraprocts (Fig. 7) with 11-12 trichobothria on sensory fields.

Measurements. Table 1.

MALE. *Color.* (in 80% alcohol). Same as the female.

Morphology. Sternites next to hypandrium distinctly pigmented; hypandrium (Fig. 2)

concave posteriorly, with a strongly pigmented band along the border. Sides projected posteriorly to form wide based, sclerotized, distally acuminate apophyses; fields of setae on each side and two mesal protuberances, one to each side of longitudinal midline. Phallic apodemes paired, independent (Fig. 2); each arm forked medially, with outer arm curved and much longer than the straight inner arm. Paraprocts (Fig. 3) articulated to clunium, each with a distinct pigmented crescent on outer border of sensory field, and with a stout, curved, distally truncate mesal prong. Sensory fields with 12-13 trichobothria. Epi-proct (Fig. 3) bilobed posteriorly, setose; each lobe with a short, sclerotized protuberance towards anterior border, next to longitudinal midline.

Measurements. Table 1.

TYPE LOCALITY. MEXICO: *Nuevo León:* Santiago, near curtain of Water Reservoir Rodrigo Gómez ("Presa de la Boca"). 27-XII-1983, beating branches and foliage of miscellaneous trees and shrubs on mountain slope. Holotype ♂, allotype ♀, five paratypes ♀. Types deposited at the Entomological Collection, Instituto de Biología, UNAM, Departamento de Zoología, Apdo. Postal 70-153, 04510 México, D.F. **MEXICO.**

RECORDS. MEXICO: *Hidalgo:* 38 K NE Rancho Viejo, Hwy. 85, 22.VI.1962, beating vegetation in forest, largely oak in canopy, E.L. Mockford, F. Hill and J. M. Campbell, 1 ♀. *Nuevo León:* Santiago: 3 K N El Alamo, 600 m, 23.II.1977, on dead leaves of banana tree (*Musa* sp.) and *Seloa* sp., 1 ♂. 32 K NE Rayones, 640 m, 24.II.1977, beating branches of shrubs with hanging dead leaves along stream, 1 ♂. *Guadalupe,* NE slope of Cerro de la Silla, Rancho Alamillos, 660 m, 22.V.1977, sifting oak litter, 1 ♀. 23.VII.1981, beating branches with dead leaves of miscellaneous shrubs, 1 ♀, 24.IV.1982, beating branches and foliage of vegetation, 1 ♂. *El Encadenado Creek,* 29 K N Hualahuises, Hwy. 85, 500 m, 24.V.1977, beating branches of miscellaneous trees and shrubs, 3 ♀. *Santiago,* Horse Tail Falls, 750 m, 21.VII.1978, beating miscellaneous vegetation, 1 ♀. *Tamaulipas:* 8 K W Gómez Farías, 15.VI.1962, beating vegetation, E.L. Mockford, F. Hill and J.M. Campbell, 1 ♀. 16 K W Gómez Farías, 16.VI.1962, beating vegetation along road, forest edge, E.L. Mockford, F. Hill and J.M. Campbell, 3 ♀. *Veracruz:* Los Tuxtlas, 4 K NE Catemaco, rd. to Sontecomapan, 16.VII.1973, beating branches and foliage of miscellaneous trees in forest, 1 ♀.

Lachesilla leonilae n.sp. (♀).

FEMALE. *Color* (in 80% alcohol). Ground color brown; compound eyes black, ocelli clear. P_4 dark brown, slightly more pigmented than the other segments. Tibiae and tarsi slightly darker than femora. Wings hyaline (Fig. 8), veins dark brown. Abdomen creamy white, with dark brown subcuticular rings.

Morphology. Subgenital plate (Fig. 9) with well defined pigmented spot on apex; with a field of microspines on posterior border and one pigmented spot on each end of transverse band underlying the plate. Surface of the plate setose, with four mesal macrosetae. Gonapophyses (Fig. 10) with apices projected posteriorly to form small cones; outer border of each gonapophysis distinctly sclerotized. Ninth sternum (Fig. 10), rounded anteriorly and surrounded by a membranous band. Next to spermapore, anteriorly, an irregular area, of coarse texture, flanked by two circular areas. Paraprocts (Fig. 11) almost

elliptical, setose, with 10-11 trichobothria on sensory fields. Epiproct (Fig. 11) setose, rounded posteriorly.

Measurements. Table 1.

TYPE LOCALITY. MEXICO: *Puebla*: 13 K N Izúcar de Matamoros, 1640 m, 8.XI.1977, beating branches of trees and shrubs with dead leaves in dividing lines between cultivated fields. Holotype ♀, 14 paratypes ♀. Types deposited at the Entomological Collection, Instituto de Biología, UNAM., Departamento de Zoología, Apdo. Postal 70-153, 04510 México, D.F. MEXICO.

I take pleasure to name this species for Dr. Leonila Vázquez García, on the 50th anniversary of her rich, fecund and generous professional life.

RECORDS. MEXICO: *Chiapas*: 13 K S. Ixtacomitán, Hwy. 195, 400 m, 13.VIII.1975, beating branches with dead leaves of miscellaneous trees in forest, 1 ♀. 35 K SW Cintalapa, Hwy. 190, 900m, 20.VIII.1975, ca. microwave station Villa Morelos, beating branches and foliage of miscellaneous vegetation in ravine, 1 ♀. *Guerrero*: 30 K S Chilpancingo Hwy, 95, 14.III.1975, beating branches of trees and shrubs in forest, 1 ♀. *Oaxaca*: 5 K NW Tamazulapam, Hwy. 190, 21.VIII.1973, beating branches with dead leaves of *Taxodium* along stream, 1 ♀. *San Luis Potosí*: El Salto, 19.VI.1962, beating vegetation, F. Hill, 8 ♀. *Tamaulipas*: 16 K W Gómez Farías, 16.VI.1962, beating vegetation along road, forest edge, E.L. Mockford, F. Hill and J.M. Campbell, 1 ♀. *Veracruz*: 25 K N Nautla, Hwy. 180, 27.VI.1962, beating vegetation, F. Hill, 1 ♀.

Lachesilla maya n.sp. (♀).

FEMALE. *Color*. (in 80% alcohol). Ground color brown; compound eyes black, ocelli clear with ochre centripetal crescents. Maxillary palps dark brown, more pigmented than rest of the body. Antennae and legs pale brown. Wings (Fig. 26) hyaline, veins straw-colored. Abdomen pale brown with dark brown subcuticular rings.

Morphology. Subgenital plate (Fig. 27) wide, setose, with slender transverse pigmented area. Distal half with distinct shoulders, apically rounded and with field of microspines next to apex. Gonapophyses (Fig. 29) narrowing distally, with apices projected to form small cones. Ninth sternum (Fig. 28) anteriorly with distinct, almost trapezoidal pigmented area. Spermapore enclosed by well defined pigmented arch. Epiproct (Fig. 29) setose, rounded posteriorly. Paraprocts (Fig. 29) almost elliptical, setose with 10-11 trichobothria in sensory fields.

Measurements. Table 1.

TYPE LOCALITY. MEXICO: *Quintana Roo*: 20 K E Xpujil, 28.III.1964, beating dried palm leaves. Holotype ♀. E.L. Mockford and Cisneros. The type will be deposited in the collection of Dr. Edward L. Mockford, Illinois State University, Department of Biological Sciences, Normal, Illinois 61761, U.S.A.

Lachesilla patzunensis García Aldrete (♀).

L. patzunensis García Aldrete, 1972, p. 125.

This species had been originally assigned to Species Group B. On basis mainly of the distal projection of the subgenital plate, it is removed from that group and included in the group here studied to which it gives name. It is only known from the type locality: GUATEMALA: Patzún, 31.VIII.1959, beating dead cedar. Holotype ♀, R.J. Dysart. The type is deposited in the collection of Dr. Edward L. Mockford, Illinois State University, Department of Biological Sciences, Normal, Illinois 61761, U.S.A. Measurements and illustrations are here included (Table 1 and Figures 17-21).

Lachesilla sulcata n.sp. (♀)

FEMALE. *Color* (in 80% alcohol). Body pale brown; compound eyes black, ocelli clear, with ochre centripetal crescents. Antennae, P_4 , tibiae and tarsi dark brown. Wings (Fig. 22) hyaline, veins dark brown. Abdomen creamy white, with ochre subcuticular rings, little conspicuous ventrally.

Morphology. Subgenital plate setose, with four mesal macrosetae (Fig. 23). Distal end almost pyramidal, with a distinct, median longitudinal furrow. Gonapophyses (Fig. 24) narrowing distally, with apices projected to form small cones. Ninth sternum (Fig. 24) with anterior border rounded; spermapore enclosed by distinct pigmented arch. Paraprocts (Fig. 25) setose, almost elliptical, with 10-11 trichobothria on sensory fields. Epi-proct (Fig. 25), straight anteriorly, rounded posteriorly, setose.

Measurements. Table 1.

TYPE LOCALITY. MEXICO: *Nuevo León*: Guadalupe, Rancho Alamillos, E slope of Cerro de la Silla, 700 m, 11.IV.1976, beating branches and dead leaves of miscellaneous vegetation. Holotype ♀, two paratypes ♀. Types deposited at the Entomological Collection, Instituto de Biología, UNAM., Departamento de Zoología, Apdo. Postal 70-153, 04510 México, D.F. MEXICO.

RECORDS. MEXICO: *Chiapas*: 14 K N Tuxtla Gutiérrez, 14.VII.1962, beating mostly oaks, forest edge and semi-cleared field, E.L. Mockford, J.M. Campbell and F. Hill. 1 ♀. *Nuevo León*: Chipinque, ca. Monterrey, 1200 m, 17.IV.1976, on dead, hanging leaves of *Seloa*, 1 ♀. From type locality: 22.V.1977, on dead leaves of shrubs and herbaceous plants, 1 ♀. 26.XII.1978, on dead banana leaves, 1 ♀. 28.VIII.1979, beating miscellaneous vegetation, low thorn forest, 1 ♀. 17.IV.1982, beating vegetation with dead leaves, 2 ♀. Santiago, 500 m, 24.V.1977, beating branches with dead leaves of fallen ash (*Fraxinus* sp.), 1 ♀. 22.VIII.1977, on dead fronds of fern, 1 ♀. El Encadenado Creek, 29 K N Hualahuises, Hwy. 85, 500 m, 24.V.1977, beating dead branches and foliage of vegetation along stream, 1 ♀. Cerro de la Silla, NW Slope, 900 m. 28.VIII.1979, beating vegetation, low forest, 1 ♀. *Tamaulipas*: 8 K W Gómez Farías, 15.VI.1962, beating vegetation, E.L. Mockford, J.M. Campbell and F. Hill, 1 ♀. U.S.A.: *Florida*: Alachua Co., Newnan's Lake, 26.VII.1952, E.L. Mockford, 1 ♀. Taylor Co., at Taylor-Dixie Co. Lines, U.S. Hwy. 27. 24.XI.1961, beating dry leaves of palms *Sabal palmetto* and *Serenoa repens*, E.L. Mockford, 1 ♀. Leon Co., Tallahassee, 7.II.1978, Berlese mixed hardwood litter, G.B. Marshall, 1 ♀. *Mississippi*: Atala Co., 8 K S Kosciusko, 29.VI.1975, beating vegetation, G. Eertmoed and M. Calhoun, 1 ♀.

Lachesilla tapanatepeca n.sp. (♀).

FEMALE. *Color* (in 80% alcohol). Body pale yellow; compound eyes black, ocelli clear, with dark brown centripetal crescents. Wings (Fig. 12) hyaline, veins straw-colored. Thorax with brown spots on each side, forming band, above the coxae, from neck to end of metathorax. Abdomen with dark brown subcuticular rings, little conspicuous ventrally.

Morphology. Subgenital plate wide, setose (Fig. 14) with four mesal macrosetae; apex rounded, with field of microsetae next to it; transverse pigmented area slender, obtusely concave at lateral ends. Gonapophyses (Fig. 16) slender, narrowing distally, with apices projected posteriorly to form small cones. Ninth sternum (Fig. 16), rectangular anteriorly, well pigmented; spermapore enclosed by distinct pigmented arch. Paraprocts (Fig. 13) setose, almost elliptical, with 11-12 trichoboria on sensory fields. Epiproct (Fig. 15) almost semicircular, setose.

Measurements. Table 1.

TYPE LOCALITY. MEXICO: *Oaxaca*: 5 K SE Tapanatepec, 20.VIII.1968, beating branches and foliage in forest, E.L. Mockford and A.N. García Aldrete. Holotype ♀. The type will be deposited in the collection of Dr. Edward L. Mockford, Illinois State University, Department of Biological Sciences, Normal, Illinois, 61761, U.S.A.

Key to females of *Lachesilla* species in Group "Patzunensis".

1. Apex of subgenital plate rounded or slightly jagged; gonapophyses long, slender, with apices slightly projected to form a conical extension.....2

Apex of subgenital plate deeply cleft; gonapophyses short, stout, with apices not projected.....*Lachesilla patzunensis* García Aldrete.

2. Distal half of subgenital plate with distinct shoulders.....3

Distal half of subgenital plate without shoulders.....4

3. Apex of subgenital plate rounded; transverse area underlying the plate slender
.....*Lachesilla maya* n.sp.

Apex of subgenital plate slightly jagged; transverse area underlying the plate broad
.....*Lachesilla bifurcata* n.sp.

4. Surface of distal end of subgenital plate smooth.....5

Surface of distal end of subgenital plate with a longitudinal groove.....
.....*Lachesilla sulcata* n.sp.

5. Apex of subgenital plate with a pigmented spot; two smaller spots, one at each end of transverse area underlying the plate; anterior half of ninth sternum rounded
.....*Lachesilla leonilae* n.sp.

Apex of subgenital plate without pigmented spots; anterior half of ninth sternum rectangular, heavily pigmented*Lachesilla tapanatepeca* n.sp.

The Position of the Group "Patzunensis" within *Lachesilla*

Mockford and García Aldrete (unpublished) have recognized a large assemblage of species groups in *Lachesilla*, formed by groups "Corona", "Rufa", "Q", "Mexica", "Centralis", "Magnifica", "Columnaris", "Fuscipalpis", "Texcocana" and what I am now calling group "Patzunensis". This assemblage closely corresponds to Division II of the genus, of García Aldrete (1974). Groups "Patzunensis" and "Mexica" are closely related and stand in close neighborhood to group "Corona": males in the former two groups would be assigned to the latter, in the absence of their corresponding females; and the females,

Table 1. Measurements (μ), proportions and ctenidial counts for *Lachesilla* species of the group "patzunensis". Abbreviations are explained in the text.

	<i>bifurcata</i>		<i>leonilae</i>	<i>maya</i>	<i>patzunensis</i>	<i>sulcata</i>	<i>tapanatepeca</i>
	♀	♂	♀	♀	♀	♀	♀
FW	2286	2377	1655	1799	2297	1969	1852
HW	1766	1860	1286	1398	1799	1542	1417
F	384	390	326	301	461	352	325
T	786	795	616	612	830	654	622
t_1	238	246	201	172	265	195	181
t_2	106	96	91	87	126	95	89
cten.	17	18	14	14	13	15	13
P_1	106	95	90	82	112	85	86
Sc	54	59	61	44	63	53	49
P	75	75	68	60	93	65	70
f_1	225	260	164	184	271	187	186
f_2	181	208	127	129	237	145	143
f_3	147	173	117	110	194	116	117
f_4	116	145	97	87	135	93	91
f_5	78	95	66	63	99	68	63
f_6	70	82	65	—	90	65	60
f_7	61	80	57	—	79	53	53
f_8	62	68	56	—	75	59	55
f_9	53	67	53	—	70	53	50
f_{10}	53	67	53	—	—	53	47
f_{11}	53	64	62	—	—	53	45
IO	327	287	313	302	389	335	340
D	163	223	156	156	181	143	181
d	102	129	97	84	122	79	85
IO/D	2.00	1.28	2.00	1.93	2.14	2.34	1.87
P0	0.62	0.57	0.62	0.53	0.67	0.55	0.46

Table 2. Character states of *Lachesilla* species in the group "patzunensis" (females).

	<i>bifurcata</i>	<i>leonilae</i>	<i>maya</i>	<i>patzunensis</i>	<i>sulcata</i>	<i>tapanatepeca</i>
With (+) or without (-) pigmented centripetal crescents on ocelli	+	-	-	-	+	+
R5 Index	2.6	2.4	2.8	2.8	2.9	2.7
F/T Index	0.48	0.52	0.49	0.55	0.53	0.52
Apex of subgenital plate entire (+) or cleft (-)	+	+	+	-	+	+
Apex of subgenital plate with (+) or without (-) distinct pigmented spot	-	+	-	-	-	-
Distal end of subgenital plate with (+) or without shoulders	+	-	+	-	-	-
Transverse area underlying subgenital plate stout (+) or slender (-)	+	-	-	+	-	-
Surface of distal end of subgenital plate smooth (+) or grooved (-)	+	+	+	+	-	+
Proximal half of ninth sternum heavily pigmented (+) or unpigmented (-)	+	-	+	+	-	+
Proximal half of ninth sternum rounded (+) or rectangular (-)	+	+	+	+	+	-
Distal half of ninth sternum with (+) or without (-) pigmented arch	+	+	+	-	+	+
Gonapophyses stout (+) or slender (-)	-	-	-	+	-	-
Gonapophyses with (+) or without (-) apical projections	+	+	+	-	+	+
Spermapore towards distal (+) or proximal (-) ends of ninth sternum.	+	+	+	-	+	+

Table 3. Matrix of Manhattan Indices* and Percentages of Concordance ** (Between Parenthesis) for *Lachesilla* Species in the Group "patzunensis" Based on 14 Characters (Females).

	<i>bifurcata</i>	<i>leonilae</i>	<i>maya</i>	<i>patzunensis</i>	<i>sulcata</i>	<i>tapanatepeca</i>
<i>bifurcata</i>	X	7 (50)	3 (78)	9 (35)	6 (57)	5 (64)
<i>leonilae</i>		X	5 (64)	9 (35)	4 (71)	5 (64)
<i>maya</i>			X	8 (42)	6 (57)	5 (64)
<i>patzunensis</i>				X	10 (28)	9 (35)
<i>sulcata</i>					X	4 (71)
<i>tapanatepeca</i>						X

* Each number represents the number of characters not shared between each pair of species.

** Each number represents the number of characters shared between each pair of species divided by 14 and the quotient multiplied by 100.

not considering the characters of the subgenital plate, would be as well assigned in the group "Corona". In addition, groups "Corona" and "Rufa" seem to be also closely related; the females in both groups have a flap on the subgenital plate: obtusely concave in those of the latter group and entire in those of the former group; besides, in both groups some species have pointed gonapophyses, and the males share the following characters: mesal paraproctal prongs, posterior border of hypandrium with heavily sclerotized band, and Y-shaped phallosomal apodemes. Since subgenital plates of the type found in the group "Patzunensis", are found throughout the genus (groups "Mexico", "Andra", "Forcepeta", "Pedicularia", "Q" and "Riegeli"), it would then seem valid to consider it as plesiomorphous for *Lachesilla*, and to consider the type of subgenital plates with flaps as apomorphies. It seems possible then that, in the course of evolution, these apomorphies may have been derived from the condition shown in groups "Patzunensis" or "Mexico".

Phylogenetic Relationships of the Species in the Group "Patzunensis".

Within the group, the basic dichotomy seems to be in the shape of the subgenital plate; a subgenital plate with the posterior projection cleft in the middle, sets off *L. patzunensis* from the other species; besides, this character is associated with gonapophyses stout and short, absent in the other cluster. In the assemblage *bifurcata* - *leonilae* - *maya* - *sulcata* - *tapanatepeca*, *bifurcata* and *maya* are closer between themselves as compared to the others, on the presence of shoulderes on the projection of the subgenital plate, and *leonilae*, *tapanatepeca* and *sulcata* form another unit.

These views are confirmed by a numerical analysis of the species in the group, based on 14 characters (Table 2). The R_i indices were measured following Mockfords and Wong's indications for *Kaestneriella* (1969); species pairs with the same digit after the decimal point were scored equal for this character. For the F/T indices, species pairs with the same first digit after the decimal point were considered equal for this character as well.

From the data on Table 2 was built a matrix of Manhattan indices and Percentages of Concordance (Table 3), and, using the method of averages (Sneath and Sokal, 1973), was drawn the cladogram of Figure 30. In it, *L. patzunensis* stands apart from the other species, joining the cluster formed by *leonilae*, *sulcata*, *tapanatepeca*, *bifurcata* and *maya* at the level of 45% concordance. The greatest affinity is shown by the pair *L. bifurcata* - *L. maya* (78% concordance), and the assemblage *L. leonilae* - *L. sulcata* - *L. tapanatepeca* form a distinct unit, where *L. sulcata* - *L. tapanatepeca* are related with 71% concordance, joining *L. leonilae* at the level of 67% concordance.

Geographically, the six species occur in southeastern México and Guatemala, the general area (between 14° and 20° N) where the center of diversification for the genus *Lachesilla* is found.

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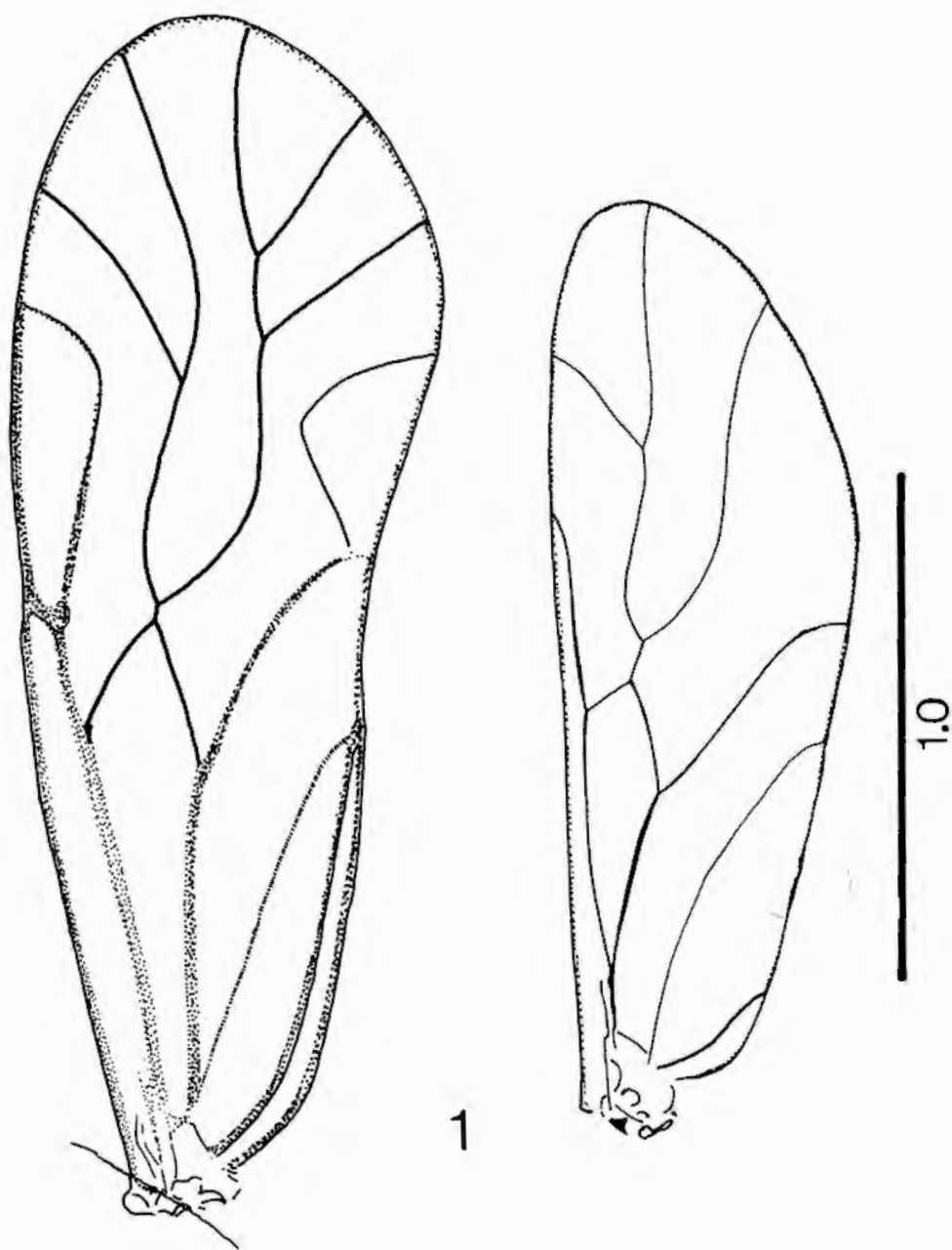
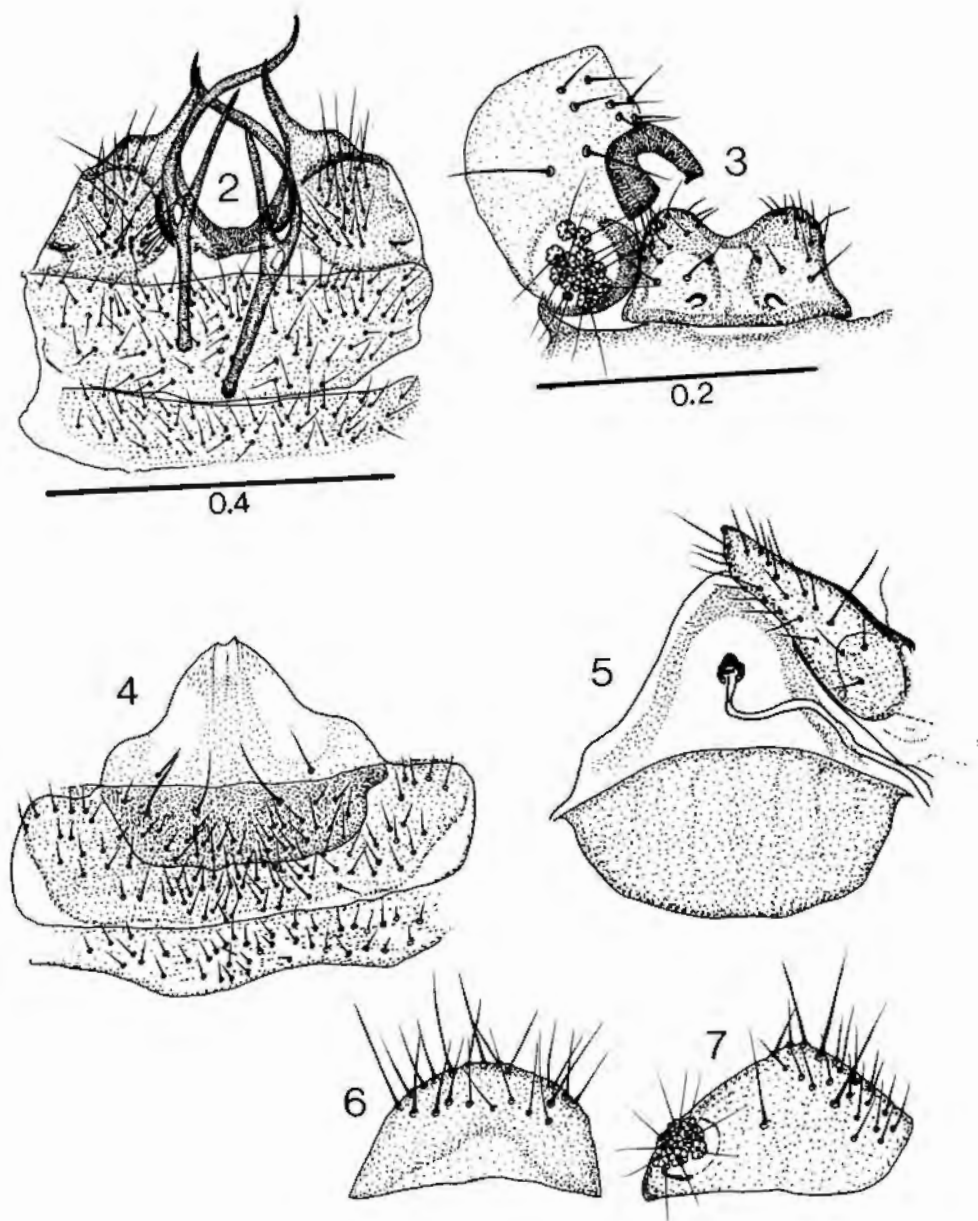
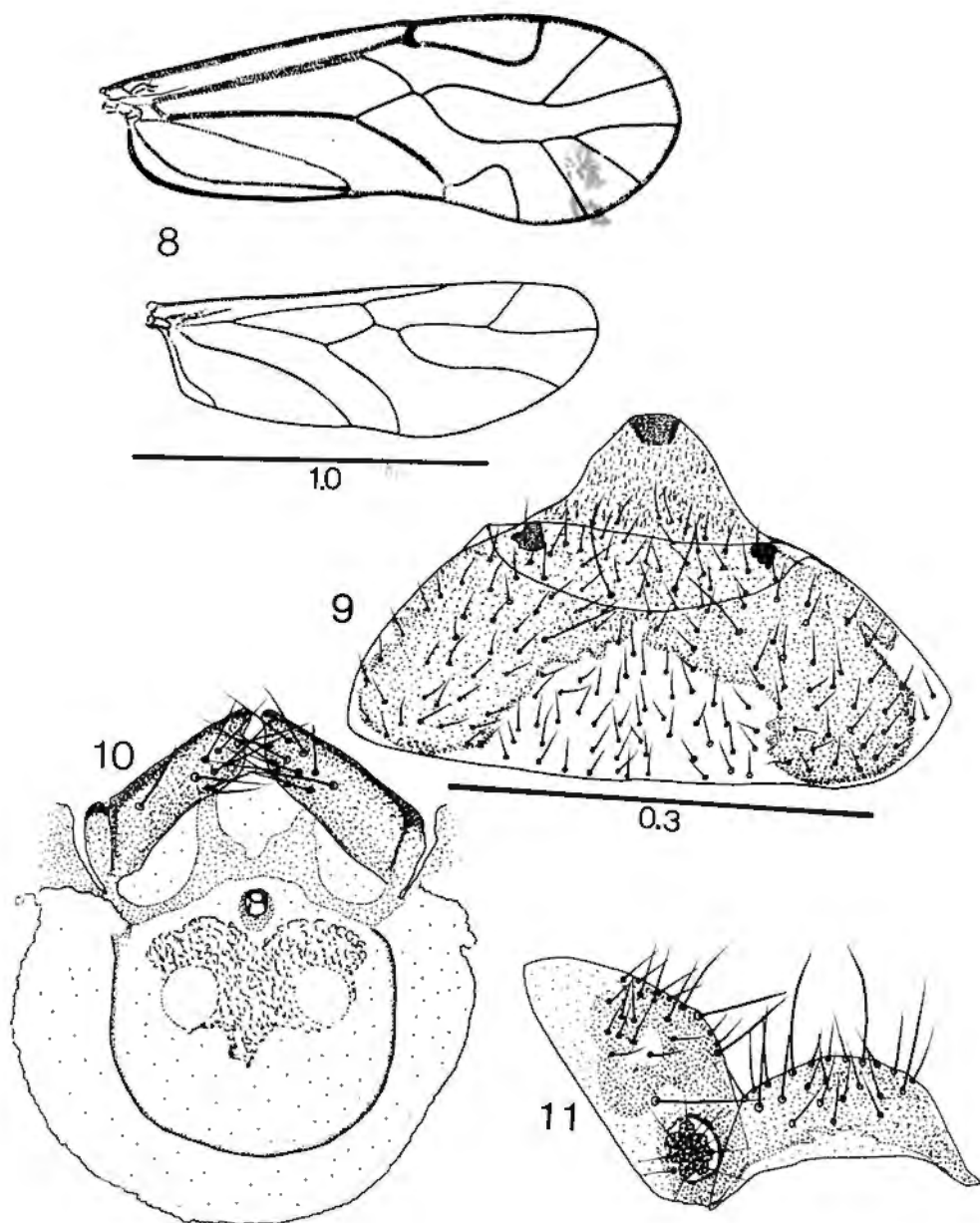


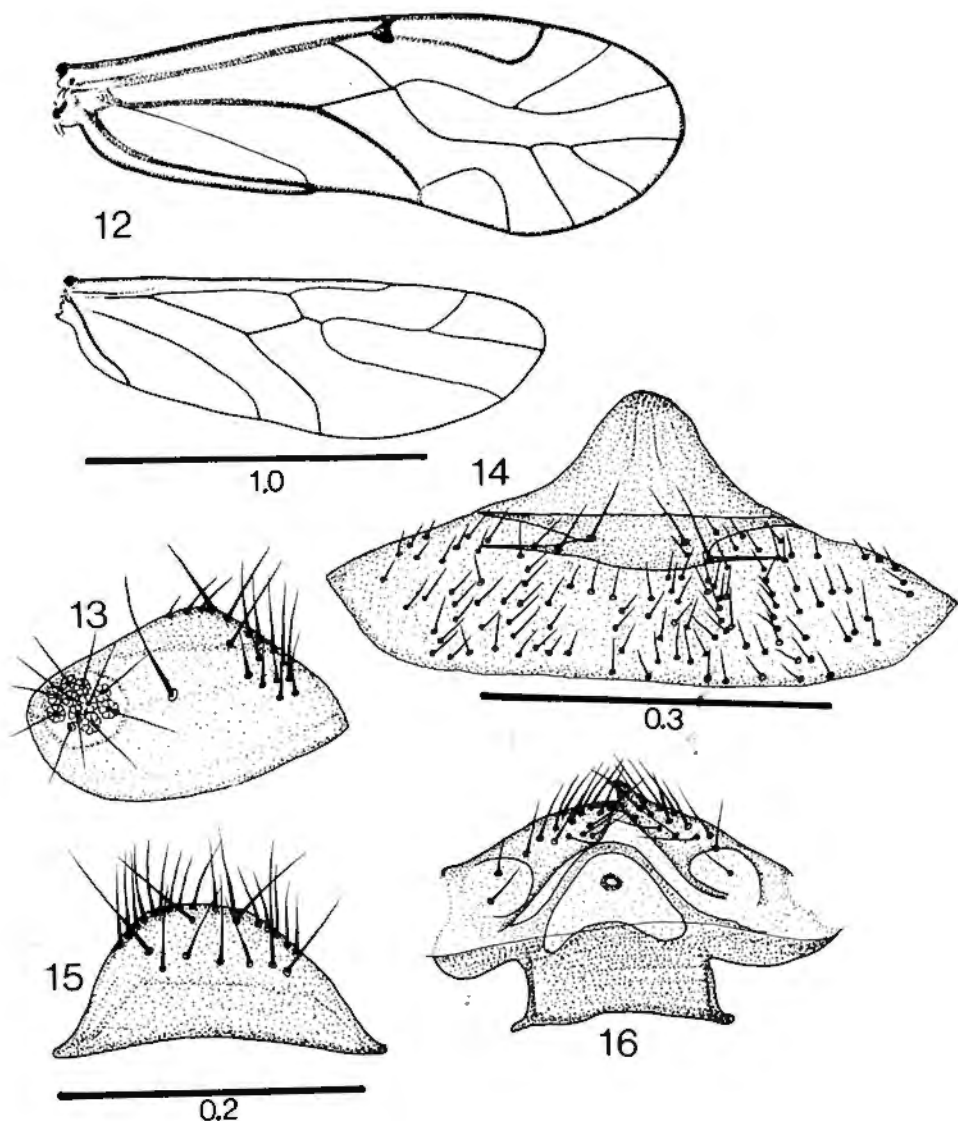
Figure 1. *Lachesilla bifurcata* n.sp. ♀. Fore and hind wings. Scale in mm. Common scale for both wings.



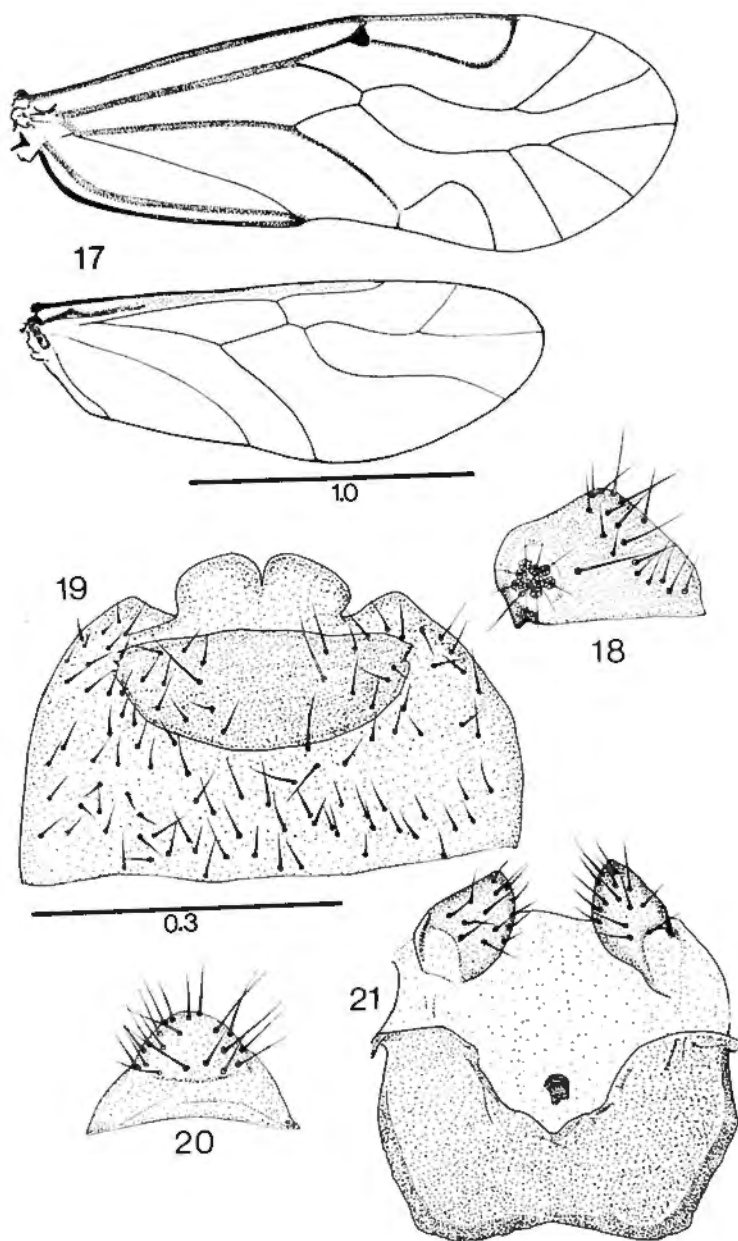
Figures 2-7. *Lachesilla bifurcata* n.sp. 2. Phallic apodemes, hypandrium and adjacent sternites, ♂. 3. Epiproct and right paraproct, ♂. 4. Subgenital plate, ♀. 5. Ninth sternum and left gonapophysis, ♀. 6. Epiproct, ♀. 7. Left paraproct, ♀. Scales in mm. Figures 4 and 5 to scale of Figure 2. Figures 6 and 7 to scale of Fig. 3.



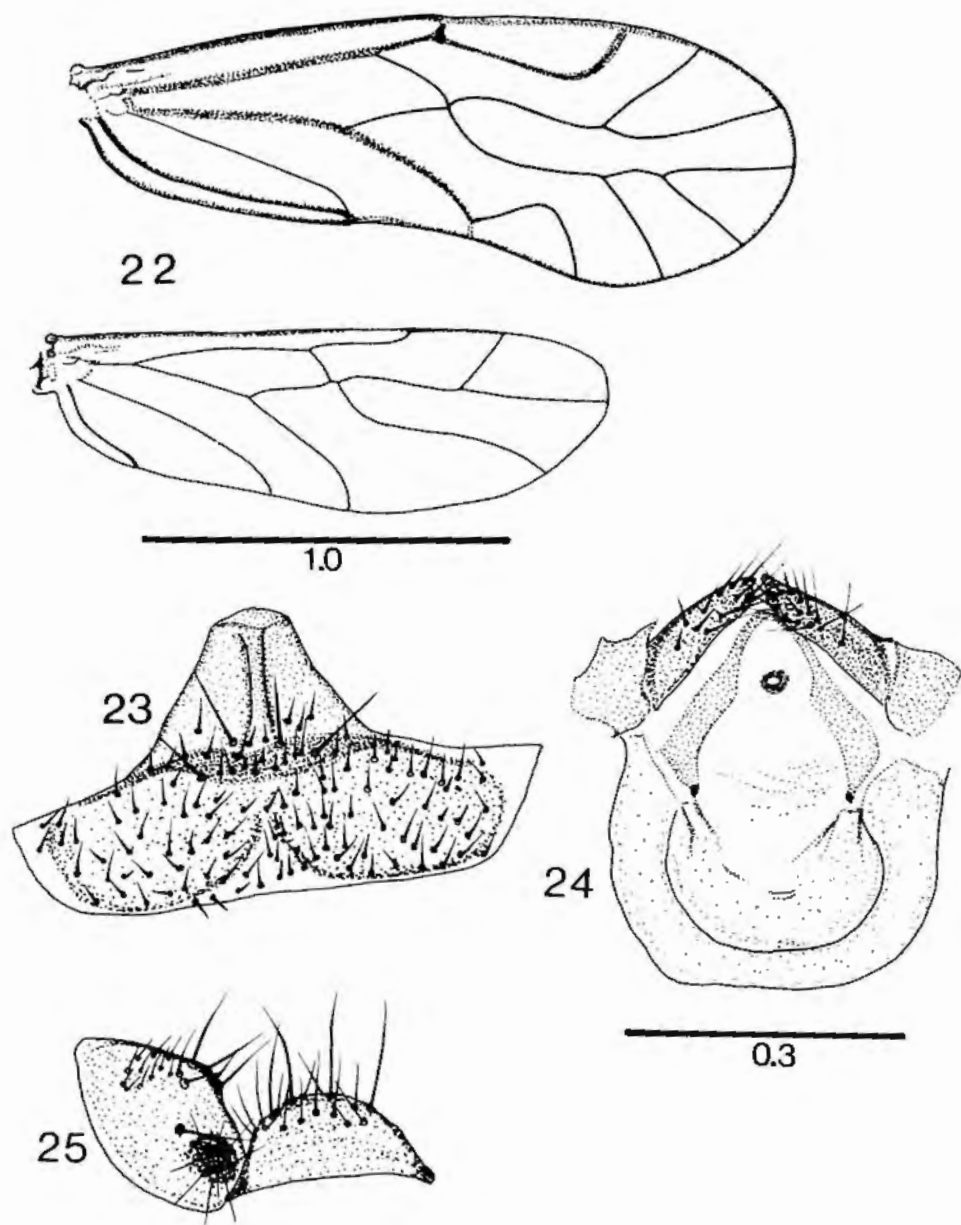
Figures 8-11. *Luchesilla leonilae* n.sp. ♀. 8. Fore and hind wing. 9. Subgenital plate. 10. Gonapophyses and ninth sternum. 11. Right paraproct and epiproct. Scales in mm. Figures 10 and 11 to scale of Fig. 9. Wings to common scale.



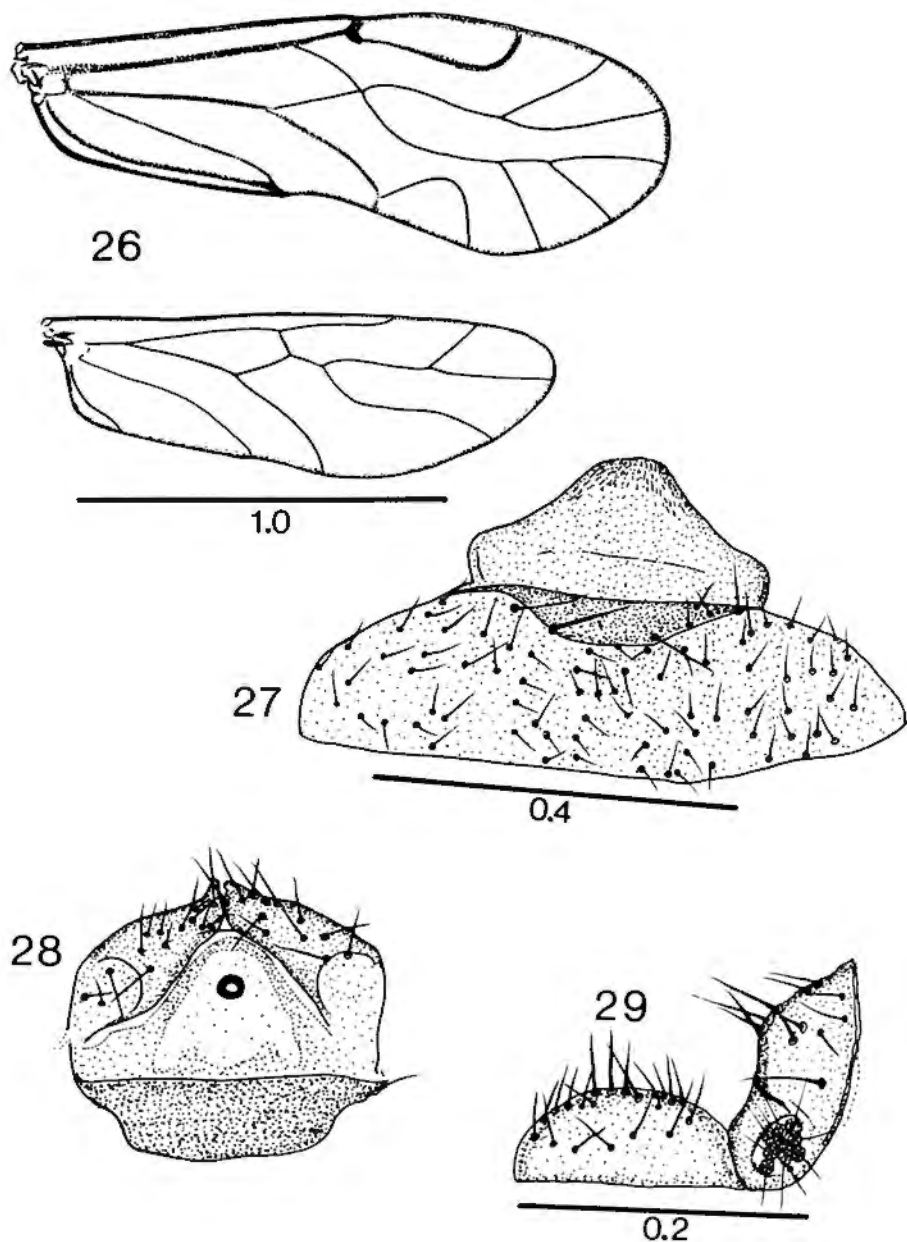
Figures 12-16. *Lachesilla tapanatepeca* n.sp. ♀. 12. Fore and hind wings. 13. Left paraproct. 14. Subgenital plate. 15. Epiproct. 16. Gonapophyses and ninth sternum. Scale in mm. Figure 13 to scale of figure 15. Figure 16 to scale of figure 14. Wings to common scale.



Figures 17-21. *Lachesilla patzinensis* García Aldrete, ♀. 17. Fore and hind wings. 18. Left paraproct. 19. Subgenital plate. 20. Epiproct. 21. Gonapophyses and ninth sternum. Scales in mm. Figs. 18, 20 and 21 to scale of figure 19. Wings to common scale.



Figures 22-25. *Lachesilla sulcata* n.sp. ♀. 22. Fore and hind wings. 23. Subgenital plate. 24. Gonapophyses and ninth sternum. 25. Right paraproct and epiproct. Scales in mm. Figures 23 and 25 to scale of Figure 24. Wings to common scale.



Figures 26-29. *Lachesilla maya* n.sp. ♀. 26. Fore and hind wings. 27. Subgenital plate. 28. Gonapophyses and ninth sternum. 29. Epiproct and left paraproct. Scales in mm. Figure 28 to scale of Figure 27. Wings to common scale.

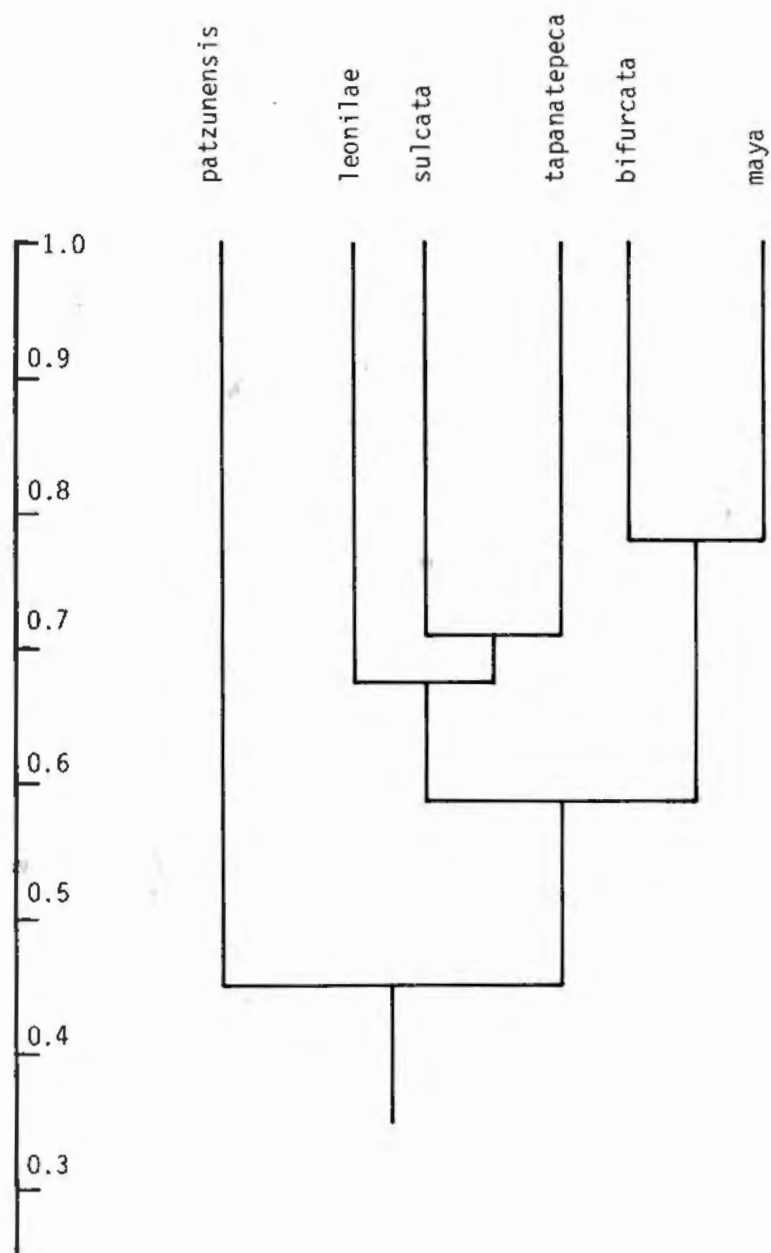


Figure 30. Relationships of the species in the group "Patzunensis".